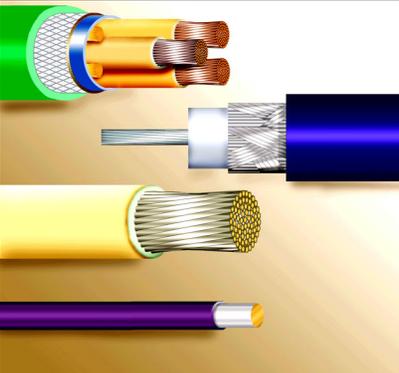
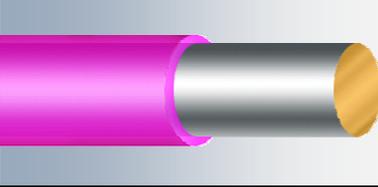
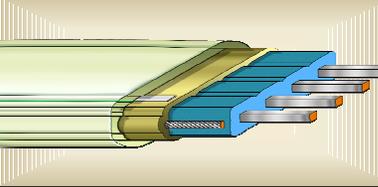
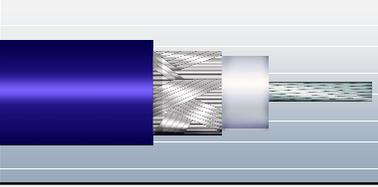
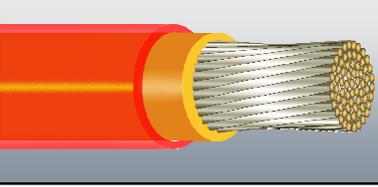


WIRE PREPARATION GENERAL REQUIREMENTS	
	<p align="center"><b>WIRE PREPARATION GENERAL REQUIREMENTS</b></p> <p>Wire conductors are available in many forms, ranging from single, solid insulated conductors, to highly integrated, multiple conductor cables.</p> <p>Wires and cables can function as simple discrete jumpers on circuit boards, or woven into intricate harnesses that snake through a vehicle, functioning as the nervous system for the routing of command, control, and signal impulses.</p> <p>The correct preparation of conductors will result in a termination of high quality and reliability.</p>

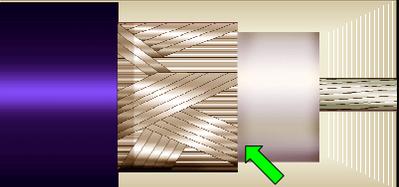
	<p align="center"><b>PREFERRED CHEMICAL STRIPPING PROCESS</b></p> <p>The insulation jacket has been neatly removed, with no damage to the conductor or insulation. No wicking of stripper or cleaner agents evident.</p> <p><b>Note:</b> Chemical stripping is suitable for solid conductors only.</p>
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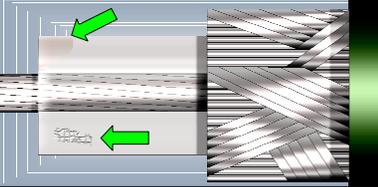
	<p align="center"><b>PREFERRED FLAT CABLE</b></p> <p>The outer jacket, conductive shield (if supplied), and conductor insulation jackets have been neatly trimmed and removed, with minimal edge flash and no mechanical damage. The conductors are in planar orientation, and the drain conductor and/or shield are undamaged.</p>
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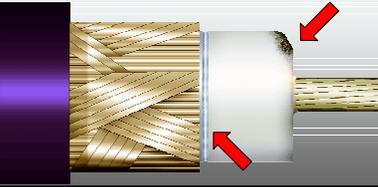
	<p align="center"><b>PREFERRED FLEXIBLE COAXIAL CABLE</b></p> <p>The insulation jacket and shield(s) have been neatly trimmed, with minimal edge flash and no mechanical damage to the conductors, shielding, dielectric, or insulation jacket. The center conductor stranding exhibits a normal twist pattern (lay).</p>
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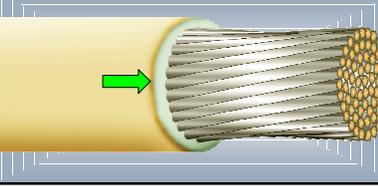
	<p align="center"><b>PREFERRED KAPTON®-INSULATED CONDUCTORS</b></p> <p>Kapton®-insulated conductors must be trimmed neatly and squarely, with minimal edge flash and no mechanical damage to the conductor or insulation.</p>
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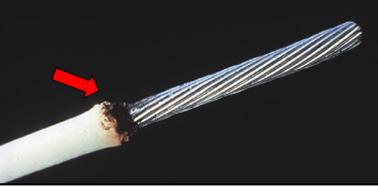
NASA WORKMANSHIP STANDARDS			
	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  JOHNSON SPACE CENTER HOUSTON, TEXAS USA 77058	Released: 03.31.2000	Revision: B
		Revision Date: 07.03.2002	
		Book: 1	Section: 1.01
		Page: 1	

WIRE PREPARATION GENERAL REQUIREMENTS (cont.)	
	<p align="center"><b>ACCEPTABLE BRAIDED SHIELD</b></p> <p>The shield has been properly stripped, evenly trimmed, and exhibits a fairly uniform coverage pattern (braid weave). No severed strands.</p> <p><a href="#">NASA-STD-8739.4 [ 10.2 ]</a>, [ 19.6.1.a ]</p>
	<p align="center"><b>UNACCEPTABLE SEVERED SHIELD STRANDS</b></p> <p>Severed shield braid strands shall be cause for rejection.</p> <p><a href="#">NASA-STD-8739.4 [ 10.2 ]</a>, [ 19.6.2.a.4 ]</p>

	<p align="center"><b>ACCEPTABLE DIELECTRIC</b></p> <p>The dielectric has been properly exposed, exhibiting a smooth, clean cut with minimal edge flash. Minor edge discoloration (due to thermal stripping) and/or surface scuffing is acceptable.</p> <p><a href="#">NASA-STD-8739.3 [ 7.2.2 ]</a>  <a href="#">NASA-STD-8739.4 [ 10.1.2 ]</a></p>
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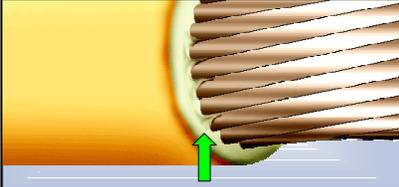
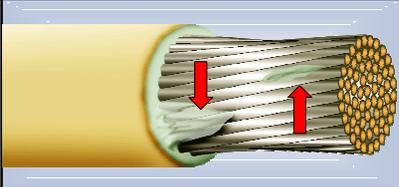
	<p align="center"><b>UNACCEPTABLE DIELECTRIC DAMAGE</b></p> <p>Coaxial cables with center conductors exhibiting damage to the dielectric (i.e.: burns, charring, cracks, crushing, cuts, deformation, necking, nicks, ringing, etc.) shall be rejected.</p> <p><a href="#">NASA-STD-8739.3 [ 13.6.2.a.1 ]</a>  <a href="#">NASA-STD-8739.4 [ 10.1.2 ]</a>, [ 19.6.2.a.1 ]</p>
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	<p align="center"><b>ACCEPTABLE DISCOLORED INSULATION</b></p> <p>Slight discoloration of the insulation jacket(s) at the trimmed edge is acceptable. Evidence of burning or charring is not acceptable.</p> <p><a href="#">NASA-STD-8739.3 [ 7.2.2 ]</a>  <a href="#">NASA-STD-8739.4 [ 10.1.2 ]</a>, [ 19.6.1.a.1 ]</p>
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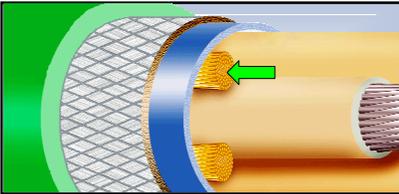
	<p align="center"><b>UNACCEPTABLE BURNED / CHARRED / MELTED INSULATION</b></p> <p>Burned, charred, or melted insulation is indicator of improper process controls and/or stripping procedures, resulting in embrittlement, reduced dielectric properties, and reduced reliability.</p> <p><a href="#">NASA-STD-8739.3 [ 13.6.2.a.1 ]</a>  <a href="#">NASA-STD-8739.4 [ 19.6.2.a.2 ]</a></p>
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NASA WORKMANSHIP STANDARDS			
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		Book: 1	Section: 1.01
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**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**

	
<p><b>ACCEPTABLE EDGE FLASH</b></p> <p>Edge flash shall not exceed one-quarter insulated wire diameter (<math>\frac{1}{4} d</math>). Edge flash is considered a contaminant, which may interfere with crimped or soldered terminations.</p> <p><a href="#">NASA-STD-8739.4 [ 10.1.6 ]</a></p>	<p><b>UNACCEPTABLE EDGE FLASH / SMEARING</b></p> <p>The edge flash is in excess of one-quarter insulated wire diameter (<math>\frac{1}{4} d</math>), and the stripped section exhibits smearing (melted insulation / film) which is considered a contaminant.</p> <p><a href="#">NASA-STD-8739.4 [10.1.6]</a></p>

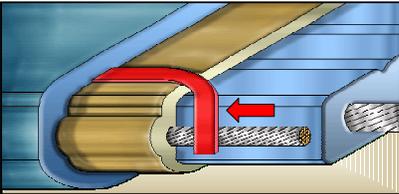
**ACCEPTABLE  
ID RIBBON / STRENGTH MEMBER**



The identification ribbon and/or strength member should be trimmed back to the insulation to prevent its inclusion into a soldered or crimped termination.

[Best Workmanship Practice](#)

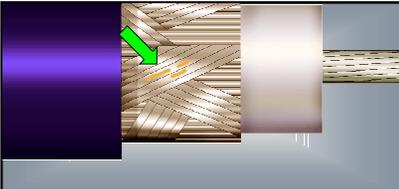
**UNACCEPTABLE  
UNTRIMMED ID RIBBON / STRENGTH MEMBER**



The identification ribbon and/or strength member has not been trimmed properly, which can interfere with the proper assembly of the soldered or crimped termination.

[Best Workmanship Practice](#)

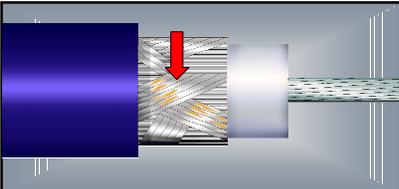
**ACCEPTABLE  
NICKED SHIELD STRANDS**



Nicked shield strands shall not exceed 10% of the total number of strands.

[NASA-STD-8739.4 \[ 10.2 \], \[ 19.6.1.3 \]](#)

**UNACCEPTABLE  
NICKED SHIELD STRANDS**

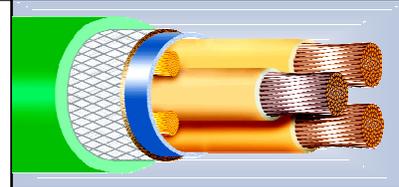


The number of nicked shield strands is in excess of 10% of the total number of strands.

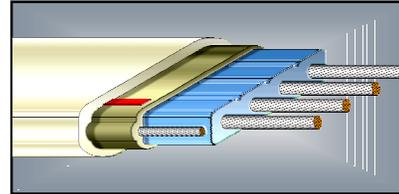
[NASA-STD-8739.4 \[ 10.2 \], \[ 19.6.2.b.2 \]](#)

<b>NASA WORKMANSHIP STANDARDS</b>			
	<b>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</b>	<b>Released:</b> 03.31.2000	<b>Revision:</b> B
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	<b>Book:</b> 5	<b>Section:</b> 1.01	

**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**

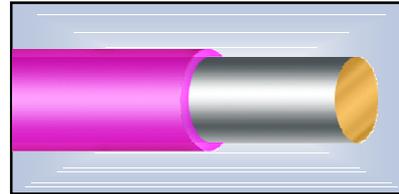
	
<p><b>PREFERRED MECHANICAL STRIPPING PROCESS</b></p> <p>The insulation jacket has been neatly trimmed, with minimal edge flash and no mechanical damage to the conductor or insulation. Conductor stranding lay (twist pattern) is undisturbed.</p>	<p><b>PREFERRED MULTI-CONDUCTOR CABLE</b></p> <p>The outer jacket, shield, strength members and conductor insulation have been neatly trimmed and removed, with minimal edge flash and no mechanical damage. Conductor stranding lay (twist pattern) is undisturbed.</p>

**PREFERRED  
RIBBON CABLE**



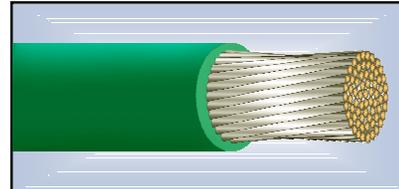
The outer jacket, conductive shield (if supplied), and conductor insulation has been neatly trimmed and removed, with minimal edge flash and no mechanical damage. The conductors are in normal planar orientation, and the drain conductor and/or shield are undamaged.

**PREFERRED  
SOLID CONDUCTOR**



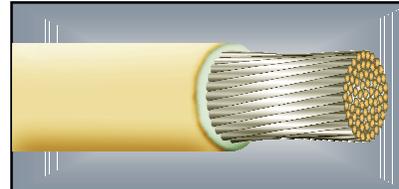
The insulation jacket has been neatly trimmed, with minimal edge flash and no mechanical damage to the conductor or insulation. Chemical / thermal / laser-trimmed conductors may exhibit slight discoloration of the insulation jacket(s) at the trimmed edge.

**PREFERRED  
STRANDED CONDUCTOR**



The insulation jacket has been neatly trimmed, with minimal edge flash and no mechanical damage to the conductor or insulation. Conductor stranding lay (twist pattern) is undisturbed.

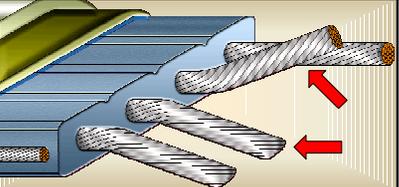
**PREFERRED  
THERMAL / EXCIMER LASER STRIPPING**



The insulation jacket has been neatly trimmed, with minimal edge flash and no damage to the conductor or insulation. Slight discoloration of the insulation jacket(s) at the trimmed edge.

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	<b>Book:</b> 1	<b>Section:</b> 1.01	

**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**

	
<p><b>ACCEPTABLE PLANAR ORIENTATION FLAT / RIBBON CABLE</b></p> <p>The individual exposed conductors should be in parallel (planar) orientation to each other, following stripping.</p> <p><a href="#">Best Workmanship Practice</a></p>	<p><b>UNACCEPTABLE NON-PLANAR ORIENTATION FLAT / RIBBON CABLE</b></p> <p>Non-planar oriented conductors are typically the result of poor handling. The conductors may be returned to their original orientation, provided no other damage is present.</p> <p><a href="#">Best Workmanship Practice</a></p>

**ACCEPTABLE  
RETWISTED LAY**

If the twist pattern (lay) of wire strands is disturbed, it shall be restored as nearly as possible to the original pattern. Retwisted lay is acceptable, provided no other damage is evident.

[NASA-STD-8739.3 \[ 7.2.4 \]](#)  
[NASA-STD-8739.4 \[ 10.1.4 \], \[ 19.6.1.a.2 \]](#)

**UNACCEPTABLE  
OVERTWISTED STRANDS**

Strands twisted in excess of the normal twist pattern (lay) exert increased stress on individual strands, and may result in conductor breakage.

[NASA-STD-8739.3 \[ 7.2.4 \]](#)  
[NASA-STD-8739.4 \[ 10.1.4 \]](#)

**ACCEPTABLE  
SCUFFED INSULATION / JACKET**

Slight scuffing (a dull or rubbed appearance) of the insulation surface finish is acceptable, provided no other damage is evident.

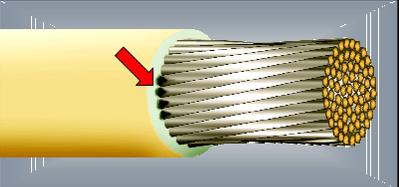
[NASA-STD-8739.3 \[ 7.2.2 \]](#)  
[NASA-STD-8739.4 \[ 10.1.2 \]](#)

**UNACCEPTABLE  
DAMAGED INSULATION / JACKET**

The conductor insulation and/or cable jacket shall not exhibit any damage, such as nicks, cuts, or charring. Conductors / jackets exhibiting damage (other than minor scuffing) shall not be used.

[NASA-STD-8739.3 \[ 13.6.2.a.1 \]](#)  
[NASA-STD-8739.4 \[ 19.6.2.a.2 \]](#)

**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**

	
<p><b>UNACCEPTABLE BURNED / ETCHED STRANDS (THERMAL STRIPPING)</b></p> <p>Burned or etched strands are typically caused by current flow between the thermal stripper blades, or as a result of stripping an energized conductor.</p> <p><a href="#">NASA-STD-8739.3 [ 6.6.2.b ] , [ 13.6.3.a.7 ]</a> <a href="#">NASA-STD-8739.4 [ 19.6.2.a.2 ]</a></p>	<p><b>UNACCEPTABLE CHEMICAL STRIPPING PROCESS INCORRECT CONDUCTOR TYPES</b></p> <p>Chemical stripping of other than solid, single-conductor wire (i.e.: coaxial cable, flat cable, multi-conductor cable, ribbon cable, shielded, stranded, etc.) is prohibited.</p>

**UNACCEPTABLE  
CRUSHED STRANDS**

Crushed strands are an indicator of improper tooling, resulting in reduced conductor cross-sectional area, reduced current carrying capability, and reduced reliability.

[NASA-STD-8739.3 \[ 7.2.3 \]](#)  
[NASA-STD-8739.4 \[ 10.1.3 \], \[ 19.6.2.a.2 \]](#)

**UNACCEPTABLE  
CUT OR FRAYED STRANDS**

Cut or frayed strands are an indicator of an improper process or tooling, resulting in reduced current carrying capability, and reduced reliability.

[NASA-STD-8739.3 \[ 7.2.3 \], \[ 13.6.2.a.8 \]](#)  
[NASA-STD-8739.4 \[ 10.1.3 \], \[ 19.6.2.a.3 \]](#)

**UNACCEPTABLE  
DAMAGED SHIELD**

Cut, crushed, gouged, damaged, or nicked shielding may result in reduced electrical isolation and/or short circuits.

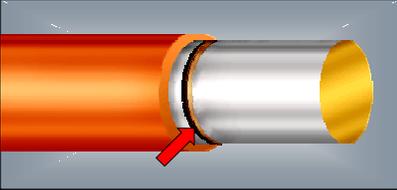
[Best Workmanship Practice](#)

**UNACCEPTABLE  
OVERLAPPING STRANDS**

Strands, retwisted and overlapping each other, will result in increased stress and difficulty in insertion, or the forming of a mechanical wrap.

[NASA-STD-8739.3 \[ 7.2.4 \]](#)  
[NASA-STD-8739.4 \[ 10.1.4 \]](#)

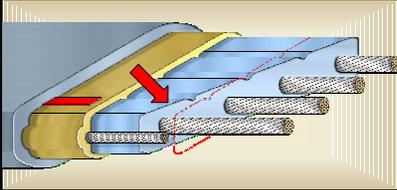
**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**



**UNACCEPTABLE  
RINGED CONDUCTORS / STRANDS**

Ringling is a symptom of an improper process or tooling. Ringing which reduces the overall cross-sectional area and/or results in exposed base metal shall be cause for rejection.

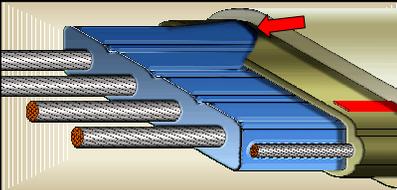
[NASA-STD-8739.3 \[ 6.6.1 \], \[ 7.2.3 \], \[ 13.6.2.a.8 \]](#)  
[NASA-STD-8739.4 \[ 6.6.1 \], \[ 10.1.3 \], \[ 19.6.2.a.2 \]](#)



**UNACCEPTABLE  
UNEVENLY TRIMMED INSULATION**

Unevenly trimmed insulation may result in reduced electrical isolation and/or short circuits, and may interfere with termination.

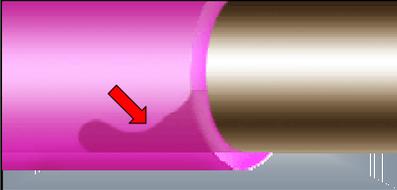
[Best Workmanship Practice](#)



**UNACCEPTABLE  
UNEVENLY TRIMMED SHIELD**

Unevenly trimmed shielding indicates poor technique and may result in improper electrical termination during connector assembly.

[Best Workmanship Practice](#)

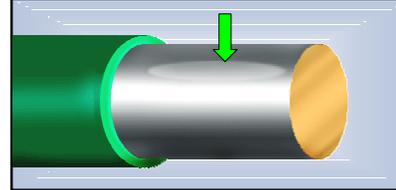


**UNACCEPTABLE  
WICKING**

Wicking of chemical stripping and/or cleaning agents under the insulation jacket is a long-term reliability concern.

[NASA-STD-8739.3 \[ 13.6.2.a.9 \]](#)

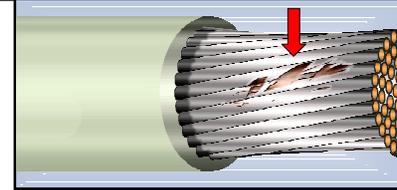
**WIRE PREPARATION  
GENERAL REQUIREMENTS (cont.)**



**ACCEPTABLE  
SMOOTH TOOL IMPRESSION MARKS**

Smooth tool impression marks (slight cuts, nicks, scratches or scrapes) on the conductor surface, which do not expose base metal or reduce cross-sectional area, are acceptable.

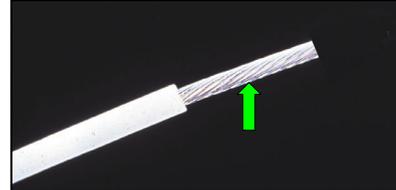
[NASA-STD-8739.3 \[ 7.2.3 \]](#)  
[NASA-STD-8739.4 \[ 10.1.3 \]](#)



**UNACCEPTABLE  
CONDUCTOR DAMAGE**

Cuts, nicks, scratches or scrapes which reduce the conductor's overall cross-sectional area, reduce the current carrying capability, and/or expose conductor base metal are rejectable.

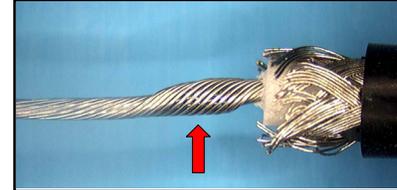
[NASA-STD-8739.3 \[ 7.2.3 \], \[ 13.6.2.a.8 \]](#)  
[NASA-STD-8739.4 \[ 10.1.3 \], \[ 19.6.2.a.2 \]](#)



**ACCEPTABLE  
STRANDING LAY / TWIST PATTERN**

Conductor stranding exhibits a normal twist pattern (lay).

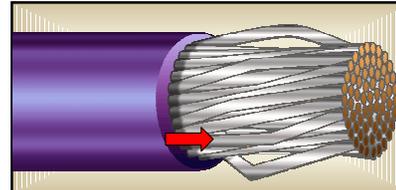
[NASA-STD-8739.3 \[ 7.2 \]](#)  
[NASA-STD-8739.4 \[ 10.1 \], \[ 19.6.1.a \]](#)



**UNACCEPTABLE  
DISTURBED LAY**

Stranded conductors exhibiting a disturbed twist pattern (lay) shall be rejected. Stranding which has been returned to the original lay is acceptable, provided no other damage is present.

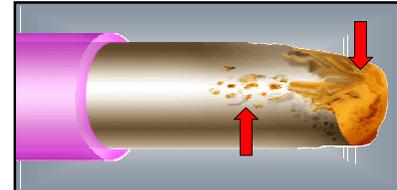
[NASA-STD-8739.3 \[ 7.2.4 \]](#)  
[NASA-STD-8739.4 \[ 10.1.4 \], \[ 19.6.1.a.2 \]](#)



**UNACCEPTABLE  
BIRDCAGED STRANDS**

Birdcaged strands are typically the result of poor handling. The strands may be returned to the original twist pattern (lay), provided no other damage is present.

[NASA-STD-8739.3 \[ 7.2.4 \], \[ 13.6.2.a.4 \]](#)



**UNACCEPTABLE  
BURNED / CORRODED CONDUCTOR  
(CHEMICAL STRIPPING)**

Burns and/or corrosion are typically caused by the use of an extremely aggressive or chemically incompatible stripping agent, or excessive exposure.

[NASA-STD-8739.3 \[ 6.6.2.c \], \[ 13.6.2.a.7 \]](#)  
[NASA-STD-8739.4 \[ 19.6.2.a.2 \]](#)

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	<b>Book:</b> 1	<b>Section:</b> 1.01	<b>Page:</b> 8

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	<b>Book:</b> 1	<b>Section:</b> 1.01	<b>Page:</b> 6